

## WHAT IS CLAIMED IS:

1. A method for augmenting an existing base station, said existing base station including a main antenna array and a diversity antenna array, said method comprising:  
replacing said diversity antenna array with a new diversity antenna array  
5 comprising both receive and transmit elements.

2. A method for augmenting an existing base station according to claim 1, wherein said main antenna and said new diversity are co-located to form one common array.

10 *2m 125i* 3. A method for augmenting an existing base station according to claim 1, wherein said receive and transmit elements of said new diversity antenna array are active, each antenna element being associated with an amplifier and a bandpass filter, located at the top of a building.

15 *2m R&T* 4. A method for augmenting an existing base station according to claim 3, wherein said amplifier associated with said transmit elements of the new diversity antenna is a low noise amplifier; and

wherein said amplifier associated with said receive elements of the new diversity antenna is a linearized power amplifier.

5. A method for augmenting an existing base station according to claim 1, wherein said main antenna comprises a receiver antenna array.

20 6. A method for augmenting an existing base station according to claim 1, wherein said main antenna comprises a transmitter antenna array.

7. A method for augmenting an existing base station according to claim 1, wherein said main antenna comprises both a receiver and transmitter antenna arrays.

8. A method for augmenting an existing base station according to claim 1, wherein said diversity antenna comprises a passive antenna.

9. A method for augmenting an existing base station according to claim 1, wherein said diversity antenna comprises a receiver antenna array.

5 10. A method for augmenting an existing base station according to claim 8, wherein said diversity antenna comprises only a receiver antenna array.

11. A method for augmenting an existing base station according to claim 1, wherein said replacing said diversity antenna array with a new diversity antenna array adds space diversity to said base station.

10 12. A method for augmenting an existing base station according to claim 1, wherein said replacing said diversity antenna array with a new diversity antenna array adds multiple diversity schemes to a forward link of said base station.

13. A method for augmenting an existing base station according to claim 12, wherein said multiple diversity schemes include space diversity and polarization diversity.

14. A method for augmenting an existing base station according to claim 13, wherein said space diversity is generated due to the spacing between said main antenna array and said new diversity antenna array; and

wherein said polarization diversity is generated among the members of a set of said receive antenna elements of said new diversity antenna array.

15. 15. A method for augmenting an existing base station according to claim 1, further comprising:

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adding a time delay to a transmitter section of said new diversity antenna array to feed a time-delayed sample to said new diversity antenna array, said time-delayed sample being of a signal transmitted by said main antenna array.

5      16. A method for augmenting an existing base station, said existing base station including an antenna array arrangement having a main antenna array and a diversity antenna array, at least a portion of said antenna array arrangement includes a passive antenna array, said method comprising:

replacing the passive antenna array with an active antenna array comprising both receive and transmit elements, located at the top of a building.

10      17. A method for augmenting an existing base station according to claim 16, wherein said each receive and transmit element of the active antenna array is associated with an amplifier and a bandpass filter.

15      18. A method for augmenting an existing base station according to claim 17, wherein said amplifier associated with said transmit elements of active antenna array is a low noise amplifier; and

wherein said amplifier associated with said receive elements of said active antenna array is a linearized power amplifier.

19. A method for augmenting an existing base station according to claim 16, wherein said main antenna comprises said passive antenna array.

20      20. A method for augmenting an existing base station according to claim 16, wherein said diversity antenna array comprises said passive antenna array.

21. A method for augmenting an existing base station according to claim 16, wherein both said main antenna array and said diversity antenna array comprise said passive antenna array.

22. A method for augmenting an existing base station according to claim 16, wherein said diversity antenna comprises a receiver antenna array.

23. A method for augmenting an existing base station, said existing base station including a main antenna array, which comprises both transmit and receive antenna elements, and a diversity antenna array, which comprises passive elements, said method comprising:

replacing said diversity antenna array with a new diversity antenna array comprising both receive and transmit elements co-located at the top of a building to form one common array;

coupling a directional coupler to said main antenna array and to said new diversity antenna array; and

connecting an isolator to said main antenna array, to sample a transmit signal emitted from said main antenna array in order to control the spurious emissions emitted from said base station.

24. A method augmenting an existing base station augmentation according to claim 23, wherein said main antenna and said new diversity antenna are co-located.

25. A method of augmenting an existing base station augmentation according to claim 23, further including,

connecting a delay unit to a transmit port of said new diversity antenna array to feed a time-delayed sample to said new diversity antenna array, said time-delayed sample being of a signal transmitted by said main antenna.

26. A method of augmenting an existing base station according to claim 23, wherein said isolator is a ferrite isolator.

27. A method of augmenting an existing base station according to claim 26, wherein said ferrite isolator possesses low internal intermodulation distortion.

28. An existing base station augmentation method according to claim 23, further including,

5                   locating said directional coupling at the top of said building.

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